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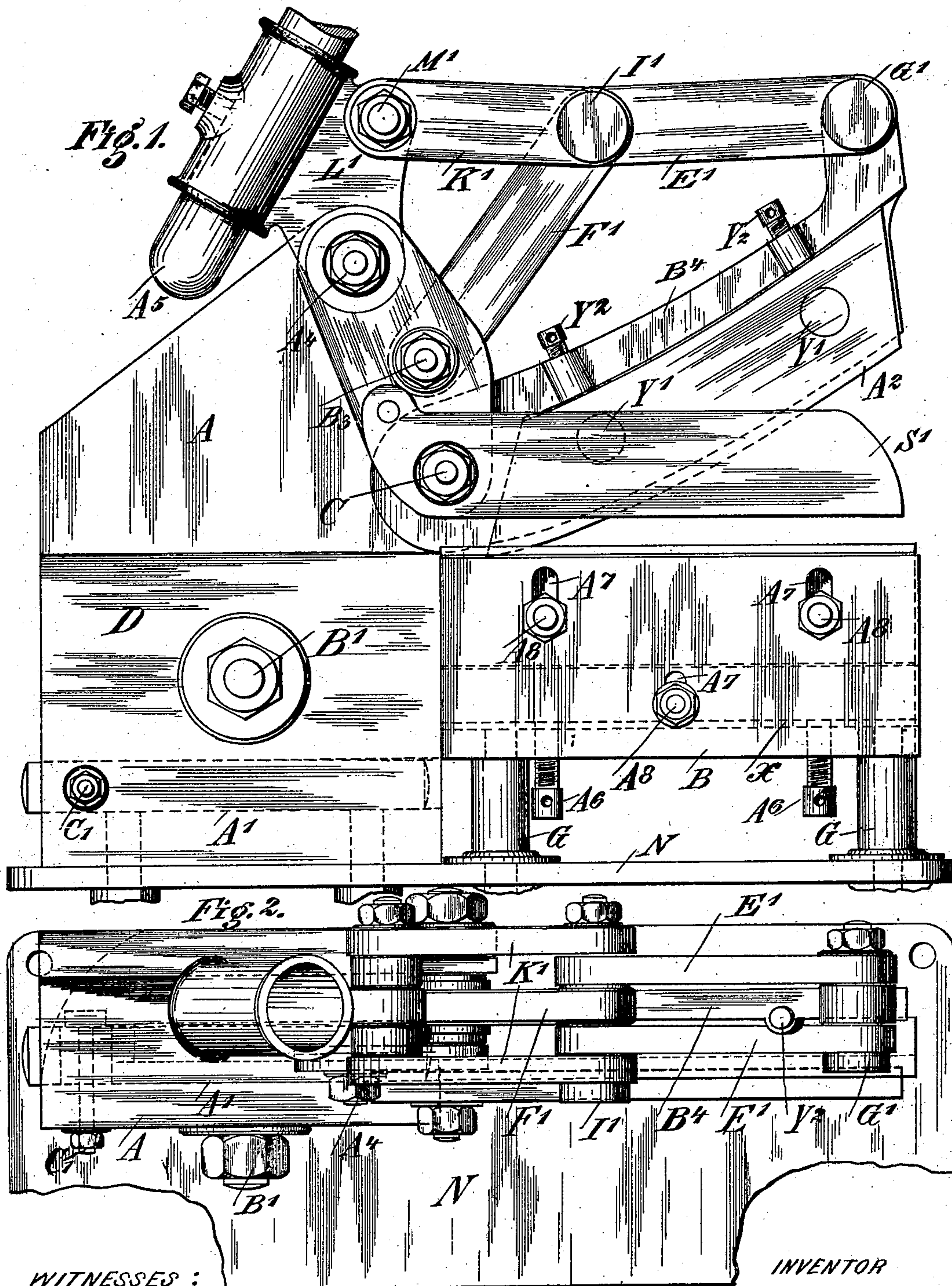
Patented Sept. 30, 1902.

B. WESSELMANN.  
FRAME FOR METAL SHEARING MACHINES.

(Application filed May 31, 1902.)

(No Model.)

5 Sheets—Sheet 1.



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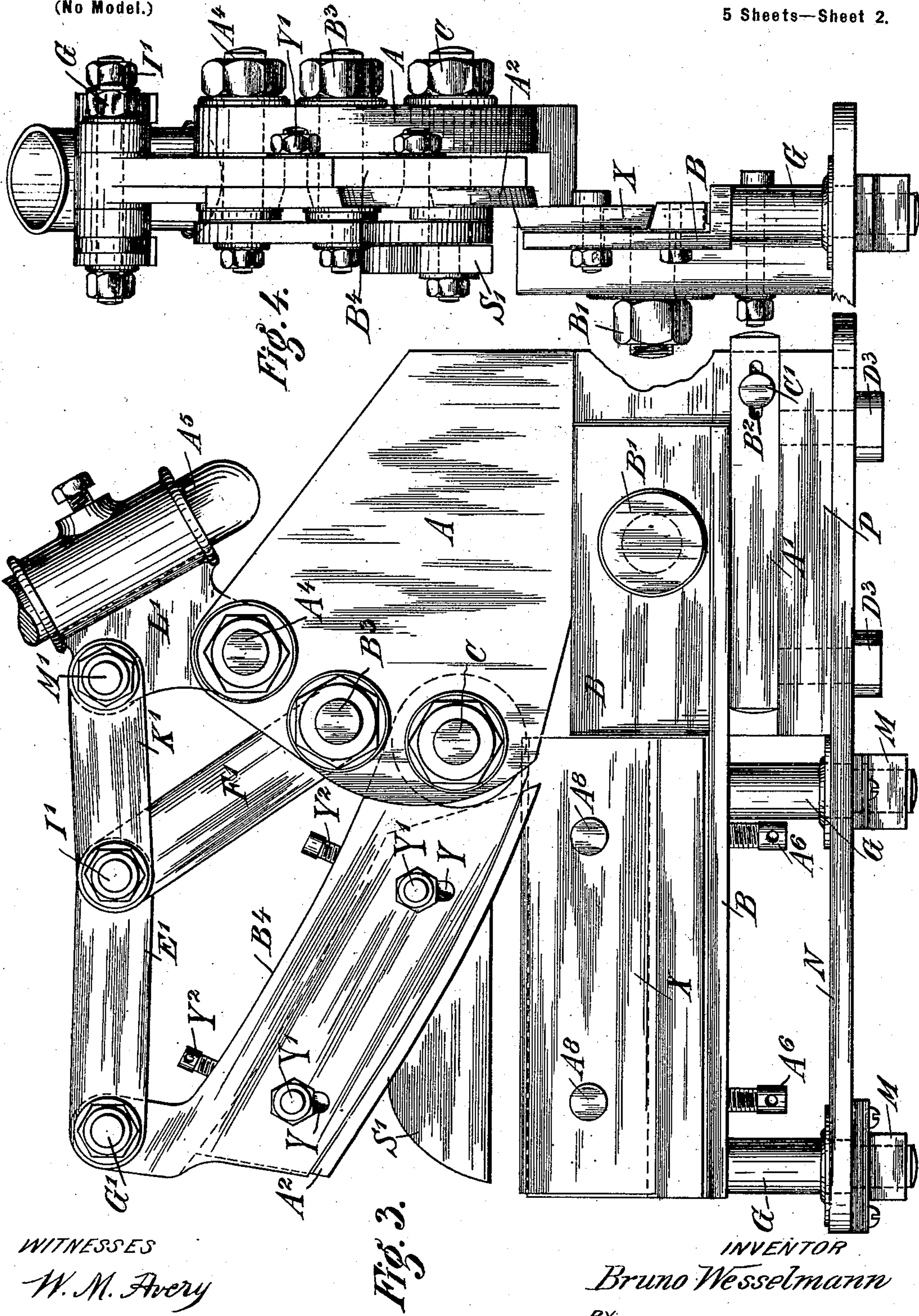
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Fig. 3.

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Fig. 5.

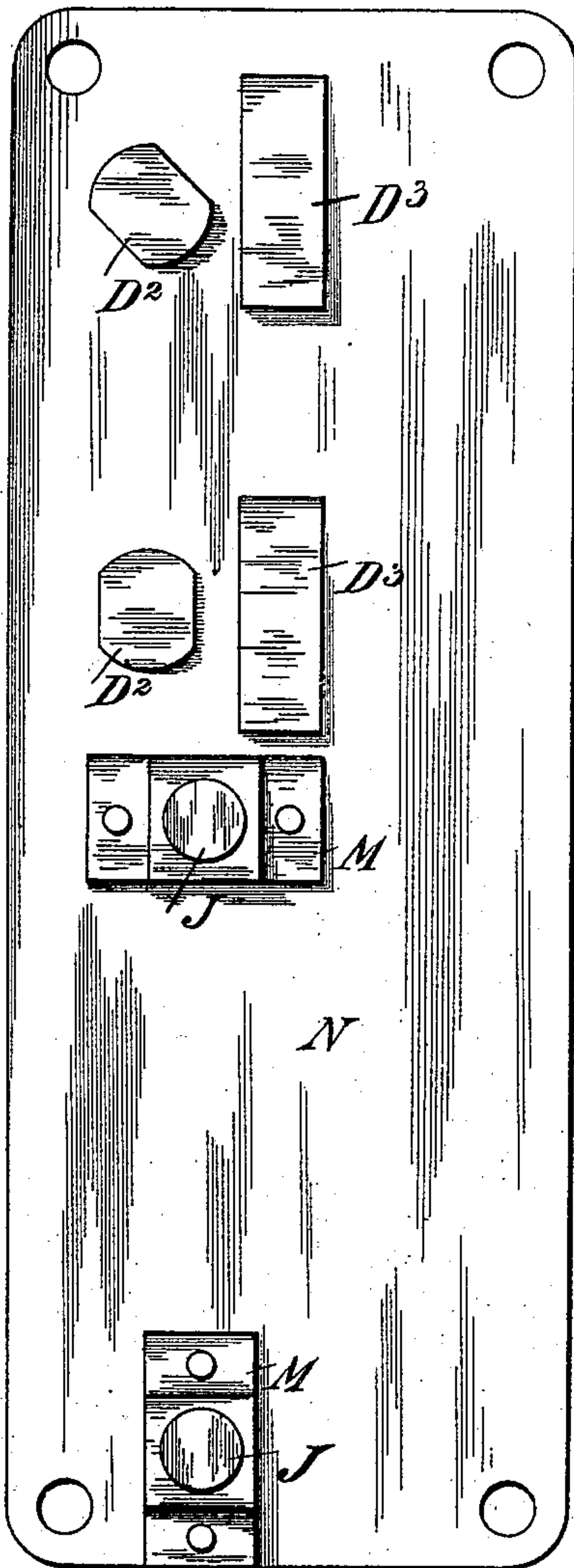


Fig. 12.

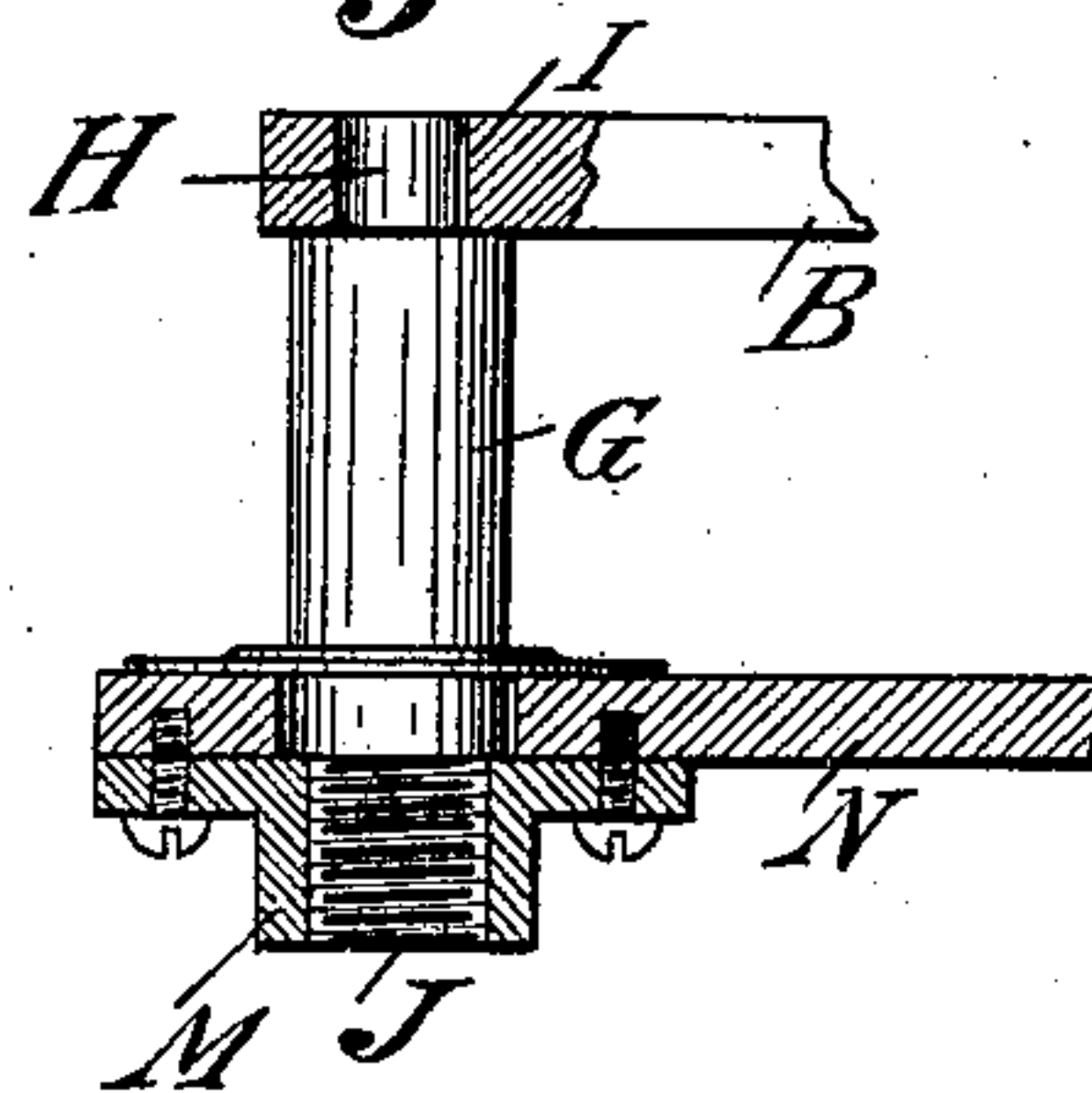
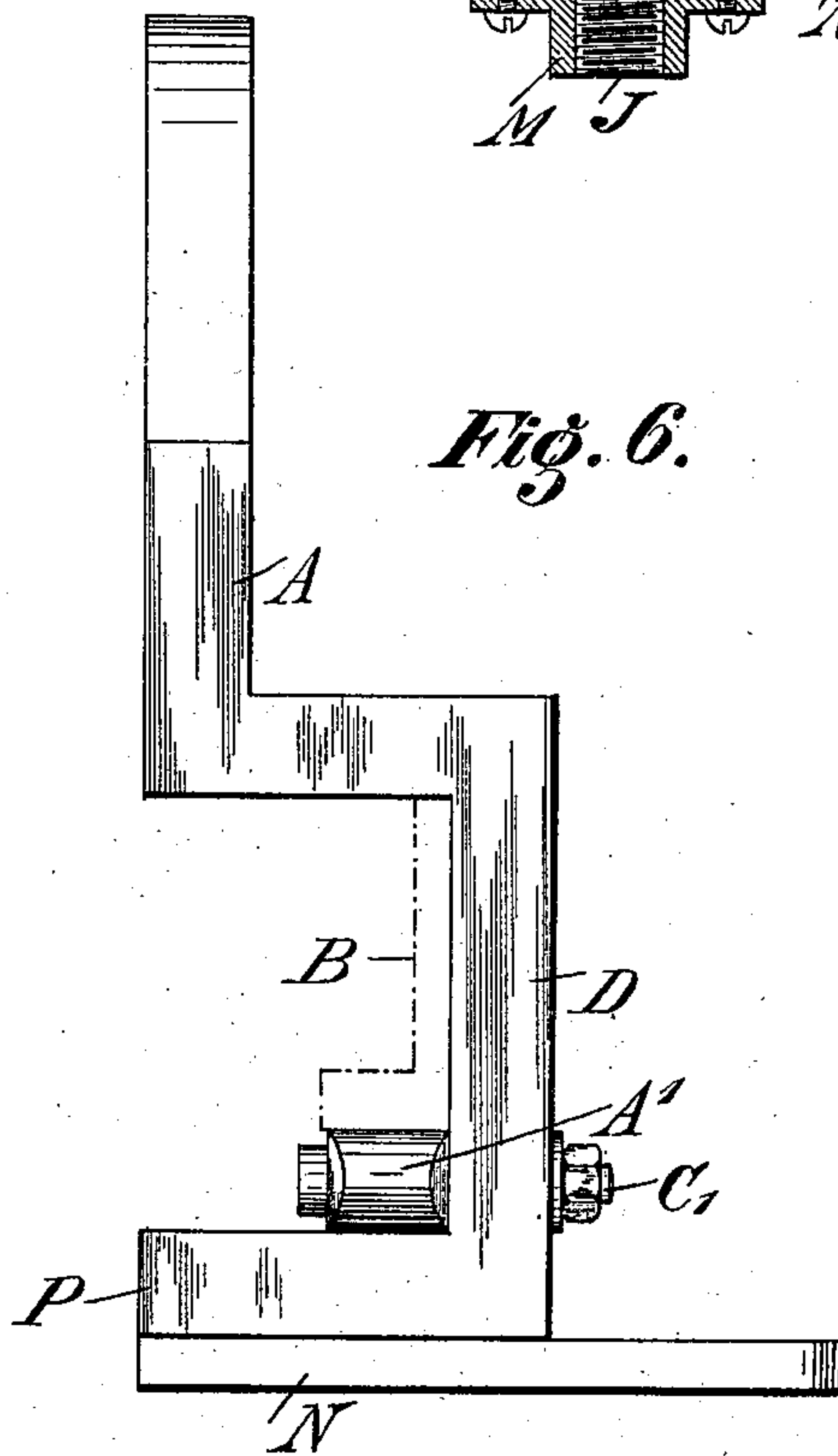


Fig. 6.



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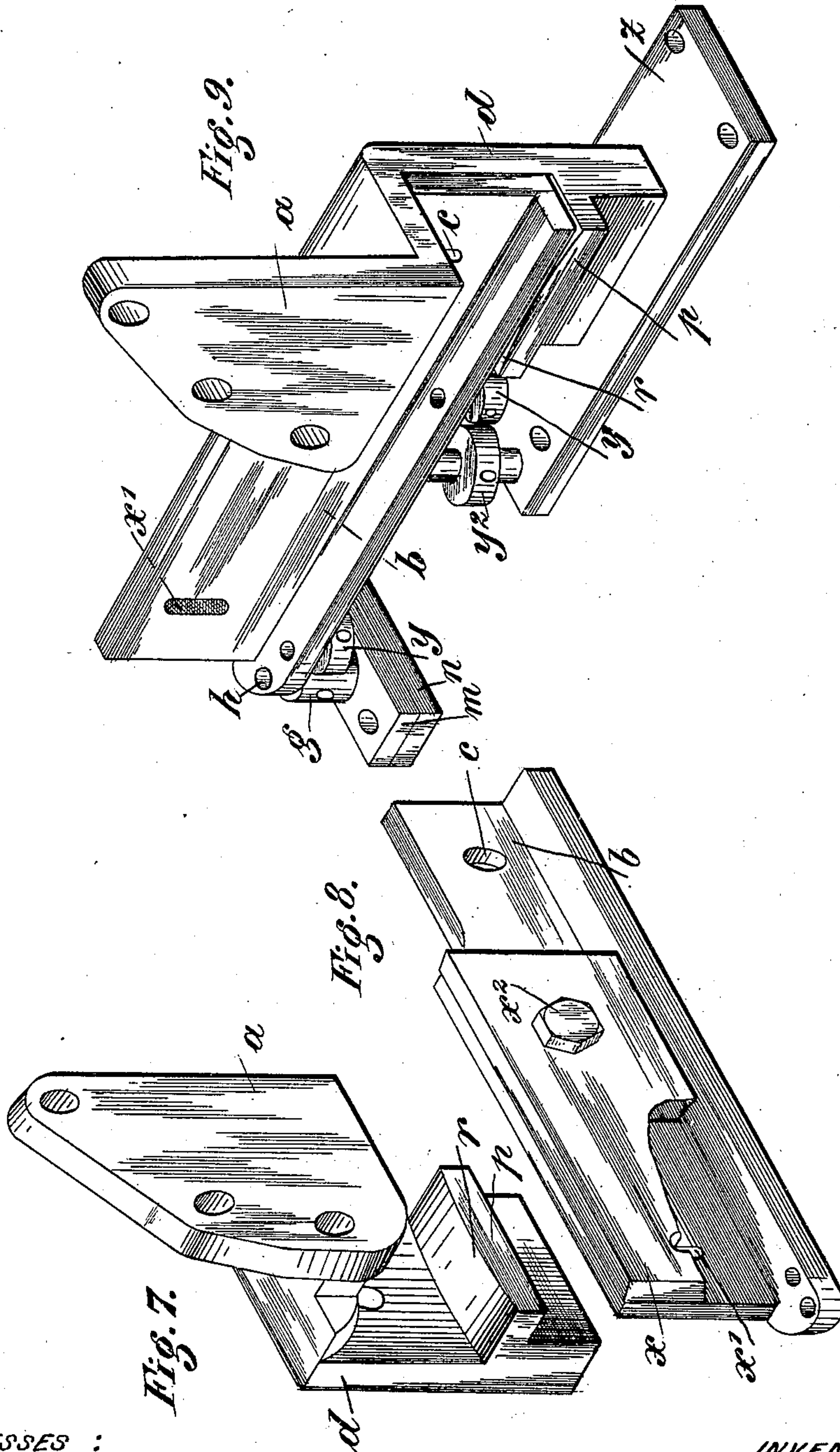
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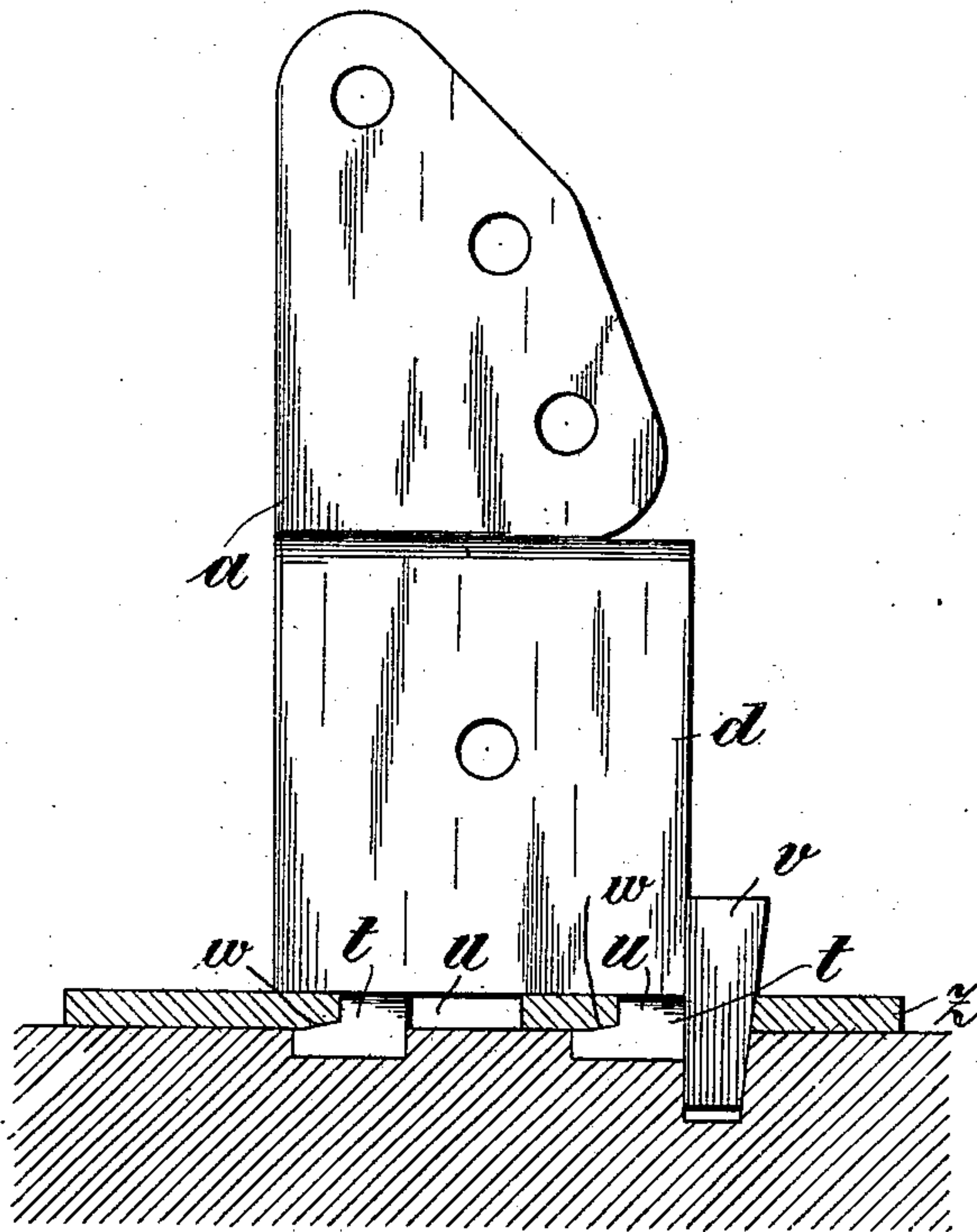
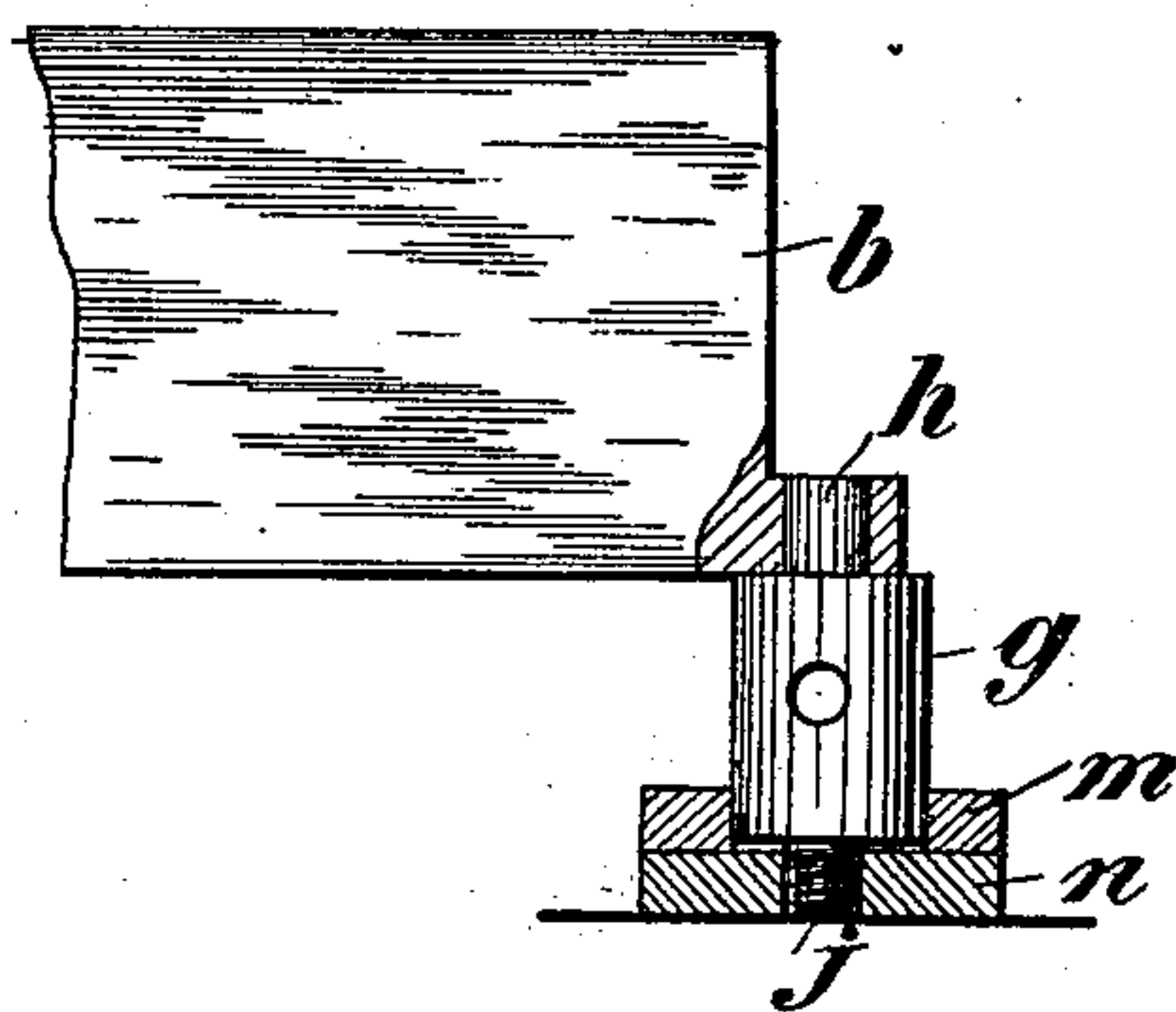


Fig. 10.

Fig. 11.



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# UNITED STATES PATENT OFFICE.

BRUNO WESSELMANN, OF GROSS LICHTERFELDE, GERMANY.

## FRAME FOR METAL-SHEARING MACHINES.

SPECIFICATION forming part of Letters Patent No. 710,310, dated September 30, 1902.

Application filed May 31, 1902. Serial No. 109,656. (No model.)

*To all whom it may concern:*

Be it known that I, BRUNO WESSELMANN, engineer, a subject of the Emperor of Germany, residing at 2 Gartenstrasse, Gross Lichterfelde, near Berlin, in the Empire of Germany, have invented a certain new and useful Improved Frame for Metal-Shearing Machines, of which the following is a specification.

10 This invention relates to a frame for metal-shearing machines.

What is essential is that the frame consists of two parts, one of which carries the cutter or blade, which during the process of cutting 15 remains stationary and which may be described as the "cutter" or "blade" carrier, while the other part constitutes what is generally known as the "body" or "trunk" of the frame. By this method of splitting up 20 the shear-frame material advantages are gained both in regard to the use of the shears and in regard to their manufacture. It is important that the part designated as the "cutter-carrier" should be made capable of 25 receiving support by some means that is independent of the other part of the frame, so that both parts of the frame may take up the pressure to which they are subjected when in operation under more favorable conditions 30 than they have done in frames hitherto existing where the cheek supporting the cutter-blade is integral with the frame. It is a well-known fact that in arrangements such as this the frame, particularly at the point where it 35 is bent, undergoes an excessive strain, with the result that breakages in shear-frames mostly occur at that point.

A further feature essential to the new arrangement is that the cutter-carrier may be 40 rendered adjustable in its relation to the body of the frame, so as to enable the angle at which cutting is taking place to be varied within given limits, the position of the lower cutter-blade to be accurately fitted to the 45 special configuration of the movable upper cutter-blade. This adjustability of the cutter-carrier may be secured by various means, the main point in all cases being that the cutter-carrier shall be provided with a support 50 that is entirely independent of the trunk or body of the frame.

A further advantage lies in the fact that

each part of the shear-frame may be formed and finished by itself. Again, the shape of both those parts is so simple that they may 55 be obtained without difficulty by forging, pressing, or by being cut off from bars as they leave the shaping-rolls. Should either of them become damaged, it may be exchanged or replaced without the other part being dis- 60 turbed. In other words, the deterioration of one part of the frame does not directly render the whole shear-frame unfit for use. Also cutter-carriers of varying sizes or lengths 65 may be attached to the same frame-body, which is another advantage arising from the construction of the frame in two parts and one that is not to be underestimated when the facility it affords for manufacturing 70 shears of different dimensions is considered. Furthermore, the novel construction of the frame involves a reduction in the weight as a result of the increased power of resistance of the frame.

The invention is illustrated in the accom- 75 panying drawings, in which—

Figure 1 shows metal-shears fitted with the improved frame. Fig. 2 is a plan of Fig. 1. Fig. 3 is an elevation of the shears as viewed 80 from the other side. Fig. 4 is a front elevation of Fig. 3. Fig. 5 is a bottom plan view. Fig. 6 is an elevation of the lower part of the frame, resting on the supporting or bed plate. Figs. 7 to 11 represent a slightly-modified 85 form of the shear-frame, Fig. 7 being a perspective view of the trunk or main body of the frame designed to receive the cutter-blade carrier. Fig. 8 is a perspective view of the 90 cutter-carrier, together with part of the cutter-blade. Fig. 9 shows the general arrangement of the parts connected together and also illustrates the arrangement of the mech- 95 anism serving for the adjustment of the cutter-carrier. Fig. 10 illustrates one mode of attachment of the frame to a pedestal or support, and Figs. 11 and 12 are modifications of the adjusting mechanism.

As shown in Figs. 1 to 4 of the drawings, the cutter-blade carrier B, which is to receive the stationary cutter-blade, is a separate 100 piece by itself. Its connection with the lower part D of the trunk A of the frame is detachable. In the form of shears here shown this connection is effected by means of a bolt



or pin B', extending both through an aperture in the frame-trunk A and through an aperture in the cutter-carrier B. For the purpose of enabling the cutter-carrier or the stationary cutter to be adjusted the free end of the cutter-carrier leans against an adjusting device whereof the arrangement is illustrated in Fig. 12. The adjusting-head G, by means of its pin H, engages in an aperture I, provided in the cutter-carrier B. The adjusting-head G itself lies within an aperture of the foundation or bed-plate N, while the screw-bolt J, projecting from the lower surface of the plate N, is screwed into a tapped piece M, serving as a nut. This nut may itself be screwed to the bed-plate N by means of screws. The opposite end of the cutter-carrier rests against a wedge A', which is made adjustable in the direction of the length of the cutter-blades and capable of being secured in the desired position by means of a set-screw C' engaging in a slot B<sup>2</sup>. By turning the adjusting-head G such head may be raised or lowered and the position of the cutter-carrier B may thereby be varied or adjusted. The arrangement of the adjusting mechanism G H I here shown is particularly advantageous, because the screw-threaded pin or bolt J is always covered over, and consequently protected from damage. Owing to the fact that the cutter-carrier is supported independently of the main body of the frame, as described, I obviate the drawback which arises from the liability of the shear-frame to sustain undue strains at the bend or corner during the cutting operation. Now, lest this strain or pressure should affect more than is desirable the intermediate parts between the cutter-carrier and the main body, these parts in the present instance consisting of one or more bolts or pins, special means may be provided in the said main body or trunk of the frame for affording the cutter-carrier the requisite support. In the arrangement illustrated in Figs. 1 to 4 the adjustable wedge A' is interposed between the projecting ledge P of the part D of the frame-body and the cutter-carrier B. This wedge enables the cutter-carrier to be supported on the frame-body or trunk in a more or less raised or lowered position, as may be desired. Owing to the provision of the projecting ledge P and of the supporting-wedge A', the pressure or strain to which the cutter-carrier is subjected is transmitted to the lower part D of the trunk of the frame, so that such trunk itself cannot be injuriously affected by the strain. The bolt which joins the cutter-carrier to the trunk (or more than one bolt or other means of attachment might be used) is in this arrangement relieved from pressure by the supporting-ledge P, so that the bolt B' serves the sole purpose of joining together those two parts—the trunk or body of the frame and the cutter-carrier. The movable cutter-blade A<sup>2</sup> is in this form of shears actuated by means of two toggle-levers, which connect the hand-lever A<sup>5</sup>, revolvable

on the pivot A<sup>4</sup>, with the movable cutter-blade A<sup>2</sup>. One toggle-lever is constituted by the links E' F', the link F' being adapted to turn on the pivot B<sup>3</sup> of the trunk A and connected with the link E' by means of the pivot I', while the link E' is connected with the cutter-blade A<sup>2</sup> by the pivot G'. The second toggle-lever consists of the links K' L', connected together by the pivot M', the link K' joining the first toggle-lever through the medium of the pivot I'. Fig. 1 illustrates the position of the parts before the depression of the hand-lever A<sup>5</sup>. When this lever is lowered, both the toggle-lever E' F' and the toggle-lever K' L' are stretched or opened out. As the said hand-lever A<sup>5</sup> is further depressed, and therefore the toggle-lever E' F' further opened out, the other toggle-lever K' L', too, is further extended, so that the power thus displayed by the last-mentioned toggle-lever K' L' is transmitted to the toggle-lever E' F', and consequently the joint action of both toggle-levers is imparted to the cutter-blade. The cutter-blade therefore continues to descend with the necessary force until the cut is completed. The movable cutter-blade A<sup>2</sup> may be secured in position in its carrier B<sup>4</sup> by means of the screws Y' extending through slots Y and be adjusted and made fast in the desired position by means of the set-screws Y<sup>2</sup>. The stationary cutter-blade X may, in the well-known manner, be connected with the cutter-carrier B by means of fastening-bolts A<sup>8</sup>, engaging in elongated slots A<sup>7</sup> in the cutter-carrier. The necessary support may be afforded to the cutter-blade X by means of the said screws A<sup>6</sup> A<sup>6</sup>.

Figs. 1, 3, and 5 illustrate the manner in which the trunk or body A of the frame is fastened on the foundation or bed-plate N, screw-bolts or pins D<sup>2</sup> D<sup>2</sup> being used for this purpose. The trunk A may be provided with projections or studs D<sup>3</sup>, adapted to engage in corresponding apertures in the bed-plate N, whereby the rigidity of the connection between the trunk and bed-plate will be enhanced.

Figs. 7 to 10 represent a somewhat similar form of shear-frame. In this case also the cutter-carrier b, Fig. 8, serving for the reception of the stationary cutter, forms a piece by itself. It is joined onto the lower part d of the frame body or trunk a by a bolt which passes through an aperture in the said trunk a and through another aperture c in the cutter-carrier b, the connection being detachable. The free end of the cutter-carrier rests against the adjusting mechanism h g j, Fig. 11, whereof the arrangement is substantially the same as that of the adjusting mechanism described above and illustrated in Fig. 12. The adjusting-head g, however, instead of being located in the bed-plate itself, is placed in an aperture of the plate n, while the screw-pin j is screwed into a part n, arranged under the plate m. The parts m n may be secured to the bed-plate by means of screws. The ad-



justing-head *g* is raised or lowered by being turned as in the form of apparatus described in the first instance, the position of the cutter-carrier being thereby correspondingly varied. Here also the screw *j* is at all times covered and concealed from view. The bolt which connects the cutter-carrier *b* with the body or trunk of the frame *a* is in this arrangement likewise relieved from pressure by a supporting-ledge *p*, so that the connecting-bolt merely serves to keep the two parts *a* and *b* together. The supporting-surface *r* of this supporting ledge or bearer *p* in the present instance is made bulging or arched, with the result that the cutter-carrier may be turned somewhat in relation to the body or trunk of the frame without ceasing, however, to receive support from the projecting bearer or ledge *p*. The connection between the body of the frame and the bed-plate *z* may be effected in the manner illustrated in Fig. 10. It is here assumed that the frame-body is provided with noses or lugs *t t*, which are inserted into slots *u u* in the bed-plate *z*, and that it is secured in this position by means of the wedge *v*. If desired, the noses or lugs *t t* may be beveled in wedge shape at *w*, so that when the wedge *v* is driven in they also may be securely locked in position. In this case also the cutter-blade *x* may be connected with the cutter-carrier by means of bolts *x<sup>2</sup>* engaging in elongated slots *x'*, provided in the carrier for the purpose. Support may be provided for the cutter-blade in the shape of set-screws, such as *y y*, and, if necessary, the cutter-carrier may be arrested in position by means of a set-screw *y<sup>2</sup>*.

The further details of construction may vary, the main point in all cases being that the carrier of the stationary cutter-blade forms a piece by itself, detachably joined onto the body or trunk of the frame, thereby affording the advantages above stated.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. A frame for metal-shears having the carrier for the stationary cutter made separate from the body of the frame and detachably secured thereto, and a support for the said carrier independent of the body of the frame as set forth.

2. A frame for metal-shears comprising a main body portion, a carrier for the stationary cutter, a bolt or pin connecting one end of the said carrier with the said body portion, and means for adjustably supporting the other end of the carrier, as set forth.

3. A frame for metal-shears, comprising a body portion, a carrier for the stationary cutter a bolt or pin connecting one end of the said carrier with the said body portion, a support for the said end of the carrier, and an adjustable support for the free end of the carrier, as set forth.

4. A frame for metal-shears, comprising a body, a carrier for the stationary cutter, detachably secured to the body, a bed-plate,

means for adjustably supporting one end of the carrier on the bed-plate, and an adjusting device between the other end of the carrier and the body, as set forth.

5. A frame for metal-shears, comprising a body, a carrier for the stationary cutter detachably secured to the body, a bed-plate, adjusting-heads between one end of the carrier and the bed-plate, and a wedge interposed between the other end of the carrier and a portion of the body, as set forth.

6. A frame for metal-shears, comprising a body having a downwardly-projecting portion provided with a ledge at its lower end, a carrier for the stationary cutter, detachably secured to the said projecting portion, a bed-plate, adjusting devices between one end of the carrier and bed-plate, and a wedge between the other end of the carrier and the said ledge, as set forth.

7. In a frame for metal-shears, a body provided with a ledge having a curved upper surface, a carrier for the stationary cutter, detachably secured to the body and resting upon the ledge thereof, a support, and means for adjustably supporting one end of the carrier, as set forth.

8. In a frame, for metal-shears, a body, a carrier for the stationary cutter, detachably secured to the body, a bed-plate, means for detachably connecting the bed-plate with the body, adjusting device between one end of the carrier and the bed-plate, and an adjusting device between the other end of the carrier and the body, as set forth.

9. A frame for shearing machinery, comprising a pair of brackets for carrying fixed and movable cutters respectively, said brackets being so disposed upon said frame as to bear distinct and independent strains, and means for flexibly connecting said brackets together so as to allow a slight movement between the same when actuated by strains of opposite direction.

10. A frame for shearing machinery, comprising a bed-plate, a bracket mounted thereon for supporting a stationary cutter, means for adjusting said cutter relatively to said bracket, and a bracket detachably mounted upon said bed-plate and provided with mechanism for supporting a movable cutter, said brackets being so disposed as to bear distinct strains having opposite directions.

11. A frame for shearing machinery, comprising a bed-plate, a bracket mounted thereon for supporting a stationary cutter, means for adjusting said cutter relatively to said bracket, a bracket mounted upon said bed-plate and provided with mechanism for supporting a movable cutter, said brackets being so disposed as to bear distinct strains, and means for flexibly connecting said brackets together, so as to allow slight relative movements due to said strains.

12. In a metal-shearing machine, the combination with a body, a cutter-carrier detachably secured to the body, and a bed-plate, of



a head having one end reduced and fitting in  
an aperture of the cutter-carrier, and its other  
end fitting in an aperture of the bed-plate  
and provided with a threaded end projecting  
5 through the bed-plate, and a nut on the bed-  
plate and with which the threaded end of the  
head engages, as set forth.

In testimony whereof I have hereunto set  
my hand, in presence of two subscribing wit-  
nesses, this 12th day of May, 1902.

BRUNO WESSELMANN.

Witnesses:

HENRY HASPER,  
WOLDEMAR HAUPT.